

WHAT IS CLAIMED IS:

1. A display device having light-emitting devices making up a plurality of pixels placed in a matrix form;
5 said light-emitting devices each possessing an emissive layer and a reflective element placed on the rear surface of the emissive layer;
 said emissive layer possessing at the said of the front side, a polarization separator which separates the light
10 emitted from the emissive layer into two kinds of polarized components by the reflection and the transmission, and phase plate;
 said emissive layer substantially maintaining the sate of the polarization of the light transmitted there-through;
15 said reflective element at least reflecting the circularly polarized light impinging in the vertical direction mainly as a circularly polarized light having a reverse helicity direction; and
 said polarization separator having a reflectance of the
20 wavelength range from 520 nm to 600 nm smaller than a reflectance of range not more than 510 nm.
2. The display device according to Claim 1, wherein said polarization separator has a reflection of a light having
25 a wavelength corresponding to blue higher than light having a wavelength other than blue.

3. The display device according to Claim 1, wherein said polarization separator has a reflectance at a wavelength range of not more than 510 nm higher than that at other visible wavelength range.

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4. The display device according to Claim 1, wherein said polarization separator comprises a cholesteric liquid crystal layer, and said phase plate comprises a quarter wave plate, and said polarization separator, said phase plate, and
10 said polarizer plate are provided from the side of said emissive layer in this order.

5. The display device according to Claim 4, wherein said polarization separator comprises a cholesteric liquid crystal layer substantially comprising one kind of a helical
15 pitch, and the central wavelength of the selective reflection is between 400 nm to 490 nm.

6. The display device according to Claim 5, wherein said polarization separator is selectively formed on the
20 position corresponding to the light-emitting device for blue light emission.

7. The display device according to Claim 5, wherein said polarization separator comprises a cholesteric liquid
25 crystal layer substantially comprising one kind of a helical pitch, the central wavelength of the selective reflection is

between 400 nm to 490 nm, and the peak wavelength of the reflection other than the main reflection range is between 510 nm to 600 nm.

5 8. The display device according to Claim 1, wherein an antireflection member for at least decreasing the reflection of the light having the main wavelength range reflected by said polarization separator is provided on a non-emissive area of the pixel composed of said light-emitting device.

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 9. The display device according to Claim 4, wherein said polarization separator comprises a plurality of cholesteric liquid crystal layers each having a different helical pitch, and the central wavelength of the selective
15 reflection is between 400 nm to 490 nm.

 10. The display device according to Claim 4, wherein said polarization separator comprises a plurality of cholesteric liquid crystal layers each having a different
20 helical pitch, and a cholesteric liquid crystal layer having the central wavelength of the selective reflection between 400 nm to 490 nm amongst said plurality of cholesteric liquid crystal layers has a thickness larger than the thickness of the layer, which has the maximum reflectance, the remaining
25 cholesteric liquid crystal layers have a thickness smaller than the thickness of the layer, which has the maximum reflectance.

11. The display device according to Claim 9, wherein said plurality of cholesteric liquid crystal layers making up said polarization separator are stacked.

5 12. The display device according to Claim 9, wherein said plurality of cholesteric liquid crystal layers making up said polarization separator are patterned in the direction of the inner surface of said substrate;

a cholesteric liquid crystal layer having a wavelength
10 range of the selective reflection corresponding to a blue color is placed on the position corresponding to the light-emitting device which emits a blue color;

a cholesteric liquid crystal layer having a wavelength
range of the selective reflection corresponding to a green color
15 is placed on the position corresponding to the light-emitting device which emits a green color; and

a cholesteric liquid crystal layer having a wavelength
range of the selective reflection corresponding to a red color
is placed on the position corresponding to the light-emitting
20 device which emits a red color.

13. The display device according to Claim 4, wherein said polarization separator comprises a cholesteric liquid crystal layer whose helical pitch is continuously changed, and
25 the wavelength range which can obtain the maximum selective reflection by said cholesteric liquid crystal layer is not more

than 510 nm.

14. The display device according to Claim 1, wherein
said polarization separator is a linear polarization separator,
5 which reflects a linearly polarized light having a prescribed
wavelength range, and transmits lights other than said linearly
polarized light having a prescribed wavelength range;

said phase plate comprises a quarter wave plate, and said
polarization separator, said phase plate, and said polarizer
10 plate are provided from the side of said emissive layer in this
order.

15. The display device according to Claim 1, wherein
said light-emitting devices comprises an organic
15 light-emitting diodes having an electrode also serving as the
reflective element, an emissive layer comprising organic thin
films, and an optional transparent electrode stacked with each
other.

20 16. The display device according to Claim 1, wherein
a space sealed with a gas is provided between a protective layer
and said polarization separator, and the distance between said
space and said emissive layer is quarter the wavelength of the
light emitted from the emissive layer or less.

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17. A display device comprising a first substrate

having a reflective electrode, an organic emissive layer and an opposite electrode within the inner surface thereof in this order to make up a plurality of pixels placed in a matrix form, and a second substrate having a polarization separator within
5 the inner surface thereof opposite the inner surface of said first substrate and having a phase plate and a polarizer plate on the outer surface thereof in this order,

said polarization separator comprising cholesteric liquid crystal layer, and said phase plate comprising a quarter
10 wave plate.

18. A display device comprising a substrate having a reflective electrode, an organic emissive layer and an opposite electrode within the inner surface thereof in this order to make up a plurality of pixels placed in a matrix form and having a
15 polarization separator, a phase plate and a polarizer plate on the outer surface thereof in this order,

said polarization separator comprising cholesteric liquid crystal layer, and said phase plate comprising a quarter wave plate.
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19. The display device according to Claim 17, wherein an active matrix elements for selecting and driving said pixel is provided within the inner surface of said first substrate.

25 20. The display device according to Claim 17, wherein an active matrix elements for selecting and driving said pixel

is provided within the inner surface of said substrate.